

REMARKS

The Office Action dated April 27, 2004 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

The specification has been amended to correct informalities. Claims 1-11 have been canceled without prejudice or disclaimer of the subject matter thereof. New claims 12-28 have been added to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added, and support for the new claims may be found in the specification, for example, on page 5, line 32 to page 7, line 31 and page 3, lines 12-16 and in canceled claims 1-11. Claims 12-28 are pending in the present application and are respectfully submitted for consideration.

The specification was objected to because of informalities. Applicants have amended the specification to correct the informalities. Thus, the objection is rendered moot.

Claims 1-5 and 8-9 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by European Patent Application Publication No. EP 0847146 A2 (*Endo et al.*) The Office Action alleged that *Endo* disclosed the features of claims 1-5 and 8-9. Because new claims 12-28 incorporate the subject matter of canceled claims 1-5 and 8-9, applicants hereby submit that *Endo* does not disclose or suggest all the features of the presently pending claims.

Claim 12, upon which claims 13-23 are dependent, recites a method for controlling transmission power in a radio system having a transmitting end and a receiving end. The method includes transmitting a digital signal from the transmitting end to the receiving end. The method also includes receiving the digital signal at the receiving end. The method also includes setting an initial value of the transmission power so that no pseudo errors are detected, a pseudo error defining an instant when a right bit or symbol decision was made, but a margin for the right bit or symbol decision was smaller than a limit value so that an actual error nearly occurred. The method also includes monitoring pseudo error occurrence in the received signal at the receiving end. The method also includes decreasing the transmission power gradually from the initial value at the transmission end when the pseudo error occurrence does not fulfill a predetermined condition. The method also includes increasing the transmission power by a predetermined amount when the pseudo error occurrence fulfills the predetermined condition.

Claim 24, upon which claims 25 and 26 are dependent, recites a radio system. The radio system includes, at a receiving end, first means adapted to monitor pseudo error occurrence in a received signal and to produce a control signal indicating when pseudo errors are detected and when the pseudo error occurrence is below a predetermined condition. A pseudo error defines an instant when a right bit or symbol decision was made, or the margin for the right bit or symbol decision was smaller than a limit value so that an actual error nearly occurred. The radio system also includes, at a transmitting

end, second means for adjusting transmission power responsive to the control signal by decreasing the transmission power when the pseudo error occurrence does not fulfill the predetermined condition and by increasing the transmission power when the pseudo error occurrence fulfills the predetermined condition.

Independent claim 27 contains some elements which are similar to claim 24, but recites a radio receiver configured to monitor pseudo error occurrence. Independent claim 28 also is similar to claim 24, but recites a radio transmitter configured to adjust transmission power responsive to a control signal.

As discussed in the specification, the present invention enables the transmission power control to be based on detecting pseudo errors in the transmission. This feature of detection of pseudo errors before an actual error occurs enables data transmission so that the payload traffic is not affected by actual errors. When a predefined condition, such as detecting a pseudo error, is fulfilled, the transmission power may be increased only as much as necessary. Thus, no unnecessary periods of high transmission power occurs according to the present invention. It is respectfully submitted that the cited reference of *Endo* fails to disclose or suggest all the elements of any of the presently pending claims. Therefore, *Endo* fails to provide the critical and unobvious advantages discussed above.

Endo relates to a transmission power control apparatus for a mobile communication system. *Endo* describes providing a reverse channel error rate judgment section in a radio base station for judging a communication quality of the reverse channel by a detected reverse channel frame error rate. *Endo* also describes a forward channel

error rate judgment section for judging a communication quality of the forward channel by a forward channel frame error rate reported by a mobile terminal. Referring to Figure 1 of *Endo*, decoder section 105 performs data error detection in a receiving signal digitized by the digital demodulation section 101, and outputs the result of detected errors to reverse channel error rate judgment section 103. Reverse channel error rate judgment section 103 collects the data errors reported by decoder section 102 and calculates a reverse channel error frame error rate. Forward error rate judgment section 104 performs judgment processing of a frame error rate of forward channel radio signals reported for a decoder section 102 and reports the result of the judgment to an output control section 107 for transmission power control of the forward channel radio signals. *Endo*, however, does not disclose or suggest setting an initial value of the transmission power so that most pseudo errors are detected, a pseudo error defining an instant when a right bit or symbol decision is made, but a margin for the right bit or symbol decision is smaller than a limit value so that an actual error nearly occurred.

In contrast, new claim 12 recites "setting an initial value of the transmission power so that no pseudo errors are detected, a pseudo error defining an instant when a right bit or symbol decision was made, but a margin for the right bit or symbol decision was smaller than a limit value so that an actual error nearly occurred" and "decreasing the transmission power gradually from the initial value at the transmission end when the pseudo error occurrence does not fulfill a predetermined condition and increasing the transmission power by a predetermined amount when the pseudo error occurrence fulfills

the predetermined condition." Claims 24, 27 and 28 also recite these features of the present invention. Applicants submit that *Endo* does not disclose or suggest at least these features of the presently pending claims.

The Office Action alleged that monitoring frame error reads on the feature of "pseudo error occurrence" at a receiving end. Applicants note that a pseudo error, as recited in claim 12, is defined as an instant when a right bit or symbol decision was made but a margin for the right bit or symbol decision was smaller than a limit value so that an actual error nearly occurred. The frame error detected by *Endo* does not disclose or suggest a pseudo error, as disclosed above. In fact, *Endo* describes detecting frame error rate that is a rate of actual errors, and that already cause communication degradation.

Endo also does not disclose or suggest decreasing the transmission power gradually from an initial value when the occurrence of the pseudo errors does not fulfill a predetermined condition for increasing the transmission power when the occurrence of the pseudo errors fulfills the predetermined condition. Applicants submit that detecting actual errors does not disclose or suggest indicating when pseudo errors are detected and when the pseudo error occurrence is below a predetermined condition. *Endo* is silent with regard to setting an initial value prior to detecting data errors. Further, applicants submit that *Endo* does not disclose or suggest setting an initial value of the transmission power so that no pseudo errors are detected. Thus, the features of claims 12-28 are not disclosed or suggested by *Endo*.

Because new claims 12-28 incorporate subject matter of claims 1-5 and 8-9 discussed in the anticipation rejection, applicants submit that the above discussion precludes any anticipation rejection of new claims 12-28 by *Endo*. Thus, applicants respectfully submit that claims 12-28 each recite subject matter that is neither disclosed nor suggested by *Endo*.

Claims 6-7 and 10-11 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Endo* in view of U.S. Patent No. 5,878,329 (*Mallinckrodt*). The Office Action took the position that *Endo* disclosed all of the elements of claims 6-7 and 10-11 but conceded that *Endo* "fails to disclose having forward error correction (FEC) and a FEC decoder." The Office Action alleged that *Mallinckrodt* provides those features missing from *Endo*. The Office Action further alleged that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Endo* and *Mallinckrodt* to have forward error correction (FEC) and a FEC decoder." Applicants submit that the cited references, either alone or in combination, do not disclose or suggest all the features of new claims 12-28.

As noted above, new claims 12-28 incorporate the subject matter of the canceled claims. Further, applicants submit that *Mallinckrodt* does not disclose or suggest those features of claims 12-28 missing from *Endo*. For at least these reasons, applicants maintain that claims 12-28 are patentable over the cited references. The features of claims 12, 24, 27 and 28 are recited above.

Mallinckrodt relates to a power control of an integrated cellular communications system. *Mallinckrodt* describes the power controlled by monitoring the bit error rate and the signal-to-noise ratio. *Mallinckrodt* describes controlling the power output levels of transmitters to a minimum necessary for satisfactory communications. Each transmission includes a code representative of the transmitter output level. The receivers compare this code to the received signal strength and adjust their associated transmitter power output levels accordingly. The bit error rate and the signal-to-noise ratio are monitored by receivers to develop a measure of signal quality. *Mallinckrodt*, however, does not disclose or suggest setting an initial value of the transmission power so that no pseudo errors are detected, a pseudo error defining an instant when a right bit or symbol decision is made, but a margin for the right bit or symbol decision is smaller than a limit value so that an actual error nearly occurred.

In contrast, as discussed above, new claim 12 recites "setting an initial value of the transmission power so that no pseudo errors are detected, a pseudo error defining an instant when a right bit or symbol decision was made, but a margin for the right bit or symbol decision was smaller than a limit value so that an actual error nearly occurred" and "decreasing the transmission power gradually from the initial value at the transmission end when the pseudo error occurrence does not fulfill a predetermined condition and increasing the transmission power by a predetermined amount when the pseudo error occurrence fulfills the predetermined condition." Applicants submit that

Mallinckrodt does not disclose or suggest at least these features of the pending claims missing from *Endo*.

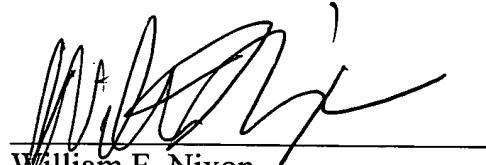
Applicants submit that *Mallinckrodt*, like *Endo*, describes detecting actual errors in monitoring the bit error rate and signal-to-noise ratio. The described monitoring of *Mallinckrodt* does not disclose or suggest setting an initial value of the transmission power so that no pseudo errors are detected. Further, *Mallinckrodt* does not disclose or suggest decreasing or increasing the transmission power based upon the occurrence of the pseudo errors fulfilling or not fulfilling a predetermined condition. Therefore, applicants submit that the cited references do not disclose or suggest all the features of claims 12-28.

It is submitted that each of claims 12-28 recites subject matter that is neither disclosed nor suggested by the cited references. It is therefore respectfully requested that all of claims 12-28 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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